

12. HEMIPTERA.

1. Coccidae

by

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With 31 figures in the text.

This collection of Coccidae, made by Dr. YNGVE SJÖSTEDT in Kilimandjaro, East Africa, contains seven species representing six genera: six of the species being new to science. Excluding the larvae, which it is practically impossible to count, this collection consists of 192 individuals in the following proportions: *Monophlebus pallidus*, n. sp., 1 ♂; *M. Sjöstedti*, n. sp., 1 adult ♀, 2 immature ♀♀; *Walkeriana africana*, n. sp., 49 ♀♀ and numerous larvae; *Stictococcus multispinosus*, n. sp., 7 ♀♀ and a few young ♀♀; *Dactylopius coccineus*, n. sp., 31 ♀♀; *Ripersia anomala*, n. sp., 42 ♀♀; *Saissetia (Lecanium) oleae*, BERN., 59 ♀♀. The difficulty of obtaining satisfactory preparations for microscopical study is, however, so great that many of the specimens had to be sacrificed in order to determine the essential anatomical characters of these insects; so that in all cases the total number of individuals has been reduced.

The two species of *Monophlebus*, as will be seen on referring to the above list, are poorly represented; but the material, though scanty, was sufficiently well preserved for diagnostic purposes, and the great size of the insects also afforded an easier means of determining their salient characteristics than is usually presented by this obscure group of insects.

Hitherto nothing was apparently known of the Coccidae of this region, and Dr. SJÖSTEDT is, therefore, to be congratulated on the discovery of so large a proportion of new species some of which are quite remarkable. In a collection so rich in new material it is not possible to offer, in a comprehensive form, extensive observations on the Coccid fauna of this region as compared with that of other parts of the African continent more especially so as our knowledge of the coccid fauna of Africa is, broadly speaking, so little known at the present moment. It is interesting to note, however, that, so far at least as the collection goes, there is an entire absence

of any representative of the *Diaspinae*, which is all the more remarkable seeing that the members of this sub-family are well represented in other parts of the continent. That this group of coccids should be entirely absent from this region is, however, highly improbable, all the more so seeing that such a universally distributed species as *Saissetia (Lecanium) oleae* was found there.

The African representatives of the genus *Monophlebus* in addition to the species recorded in this work are *M. fortis* CKLL. and *M. fulleri* CKLL., both from Natal; of the former a single female was found under bark of Eucalyptus, and the latter, of which females only were obtained, is said to be uncommon on grass heads. *M. raddoni* WEST. (♂ only) was discovered on the Gold Coast, in Western Africa.

The remarkable and somewhat variable genus *Walkeriana* has hitherto been represented in Africa by *W. andreae* GREEN, from the Congo; and *W. pertinax* NEWST., from Central Africa.

It is important to note that the hitherto monotypic genus *Stictococcus* was founded by COCKERELL, in 1903, from material discovered by Dr. SJÖSTEDT in Western Afrika. That the same authority should have also discovered the second known species of this genus, on the eastern side of the great continent, is of much interest.

Saissetia oleae is not only a very widely distributed insect throughout the world, but it is also practically omniverous, and has proved a great pest to the orange and coffee and various other cultivated fruits and plants.

A catalogue together with the descriptions of the new coccidae is herewith appended.

Subfam. *Monophlebinae*.

Gen. **Monophlebus** BURM.

Handb. Ent., ii, p. 80 (1835).

Monophlebus Sjöstedti n. sp.

Fig. A, 1—4. — Female adult. (Fig. 1.) Slightly farinaceous; scantily pubescent on the dorsum, but more so on the venter. Colour pale terra-cotta with a dull orange tinge, when dry; when placed in alcohol dull red with a dull orange tinge. Antennae and legs dark piceous, hairs greyish yellow. Form very elongate, highly convex dorsally so much so as to appear almost cylindrical; segments strongly defined; margin forming a distinct keel or ridge. Antennae (Fig. 2) of eight segments, the first four shortest and in length about equal; fifth, sixth and seventh much longer, equal in length; eighth very long, nearly as long as the three preceding ones; all the segments with many fine hairs. Legs not reaching nearly to the margin; tibia (anterior) with numerous stout spines at the apex beneath; anterior tarsi¹ (Fig. 3) furnished beneath with a double series of spines some of which are dilated apically and suddenly truncate (Fig. 3c), this character being strongly pronounced in the apical spine; claw (Fig. 3) with the tip bidentate, the larger upper tooth being paler than the remaining portion of the claw; digitules (Fig. 3b) unequal, the shortest with a

¹ It has not been possible to examine the other tarsi under a high magnification; but they are not likely to differ very materially. R. N.

disc-like apex. Derm (near the antennae) with numerous large circular spinnerets (Fig. 4) and minute spines. Length: 21,50; width 9—9,50 mm.

Kilimandjaro: Kibonoto, 1,300 m. July 11th, 1905. One adult female only. In the same tube was a much smaller and younger example, evidently of the same species, judging from its narrowly elongated form, but this example had imperfect antennae so that it was not possible to fully describe it. This species has a marked resemblance to GREEN'S *M. Stebbingi*, but may be distinguished from this insect by its reddish colour, by the relative length in the antennal segments, the curious truncate spines on the tibia and the singular form of the digitules.

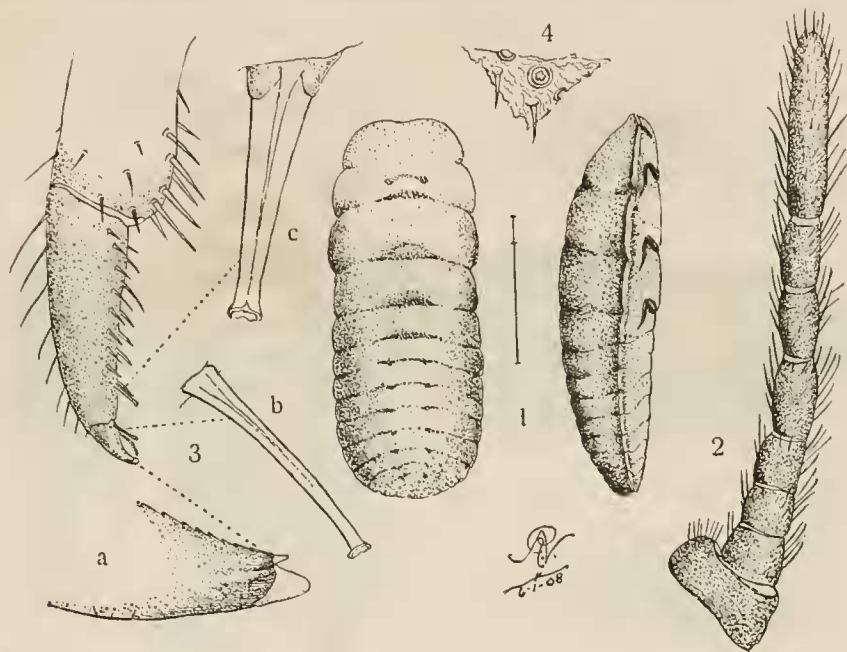


Fig. A. *Monophlebus Sjöstedti*. ♀: 1 dorsal and lateral; 2 antennae; 3 tarsus; 3 a tip of claw, 3 b tarsal digitule, 3 c tarsal spine; 4 derm.

Monophlebus sp.

Possibly the same as the last, but immature and also imperfect. It is of a much brighter red than *M. Sjöstedti*, but this is probably due to age, and the apparently complete absence of farinose covering.

Kilimandjaro: Kibonoto, December, 1905. Among grass, especially scrub.

Monophlebus pallidus n. sp.

Fig. B, 1—1b. — Male (Fig. 1). Pale dull yellow or straw colour; clothed with long blackish hairs especially at the sides of the abdomen. Antennae, eyes (base), triangular sclerite of the nape, mesothoracic sclerites (including the apodeme), margins of post-scutellum, tip of genital armature, and a narrow interrupted band on each of the abdominal segments, black. Wings smoky with two white pseudo-veins; nervures with black marginal lines. Abdominal lobes («tassels») two in number, terminal;

¹ Indian Museum Notes, Vol. V. No 3, p. 100.

very long or about half the length of the abdomen; clothed with long blackish hairs. Antennae (Fig. 1 a) apparently normal but the apical segments are wanting; second segment (Fig. 1) with a pencil of dark secretion(?); on one side this matter appears as a dark angular projection, on the other side, it is extended for some considerable distance among the long hairs. Legs highly chitinated, clothed with spinose hairs; tarsi (Fig. 1 b) with long slender claws, the latter with a pair of strong spines.

Length inclusive of the caudal processes, 5,50 mm. expanse of wings; 10 mm.

Kilimandjaro: Kirarágua; April 1906.

The males of two other species of *Monophlebus* viz. *M. atripennis* KLUG. from Java, and *M. dubius* FAB. from Sumatra are also characterised by having only two

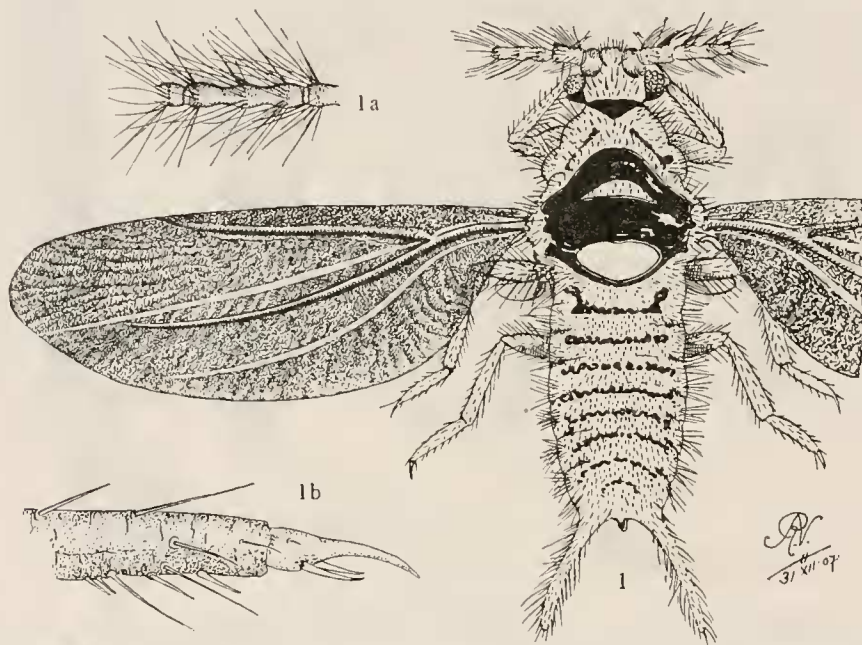


Fig. B. *Monophlebus pallidus* ♂: 1 dorsal; 1 a section of antenna; 1 b tarsus.

fleshy appendages to the abdomen; but the colour in both species is crimson or dark red; whereas in *M. pallida* it is dull yellow or straw-coloured. Colour alone seems a very flimsy character on which to establish the specific character of this insect; but I do not think it possible that this insect will eventually prove to be identical with either of the above named species, all the more so seeing that there is such a marked difference in locality; moreover the descriptions of these two insects are so meagre and inadequate, that I hesitate to accept either of them.

Gen. *Walkeriana* SIGN.

Ann. Soc. Ent. Fr., (5), V, p. 390 (1875).

Walkeriana africana n. sp.

Fig. C, 1—6. — Female adult, pubescent; and slightly farinose, very convex behind, narrowed and depressed in front; segmentation strongly pronounced; sides

between the marginal and submarginal patches of wax steep and irregularly concave. Pubescens fulvous, densest and longest at the margins, more especially so at the two extremities. The narrow margin is clothed with short, white, granular wax, more or less continuous; and there are contiguous patches of the same kind of white wax forming a median (abdominal) and a submedian, longitudinal band, which show up very distinctly against the dark ground. Integument piceous; pale dull crimson beneath the patches of white wax and the margins; venter dull crimson; legs and sides of abdomen dark piceous. Antennae (Fig. 1) of eleven segments, slightly tapering towards the apex; width of the first segment equal to the length of the terminal

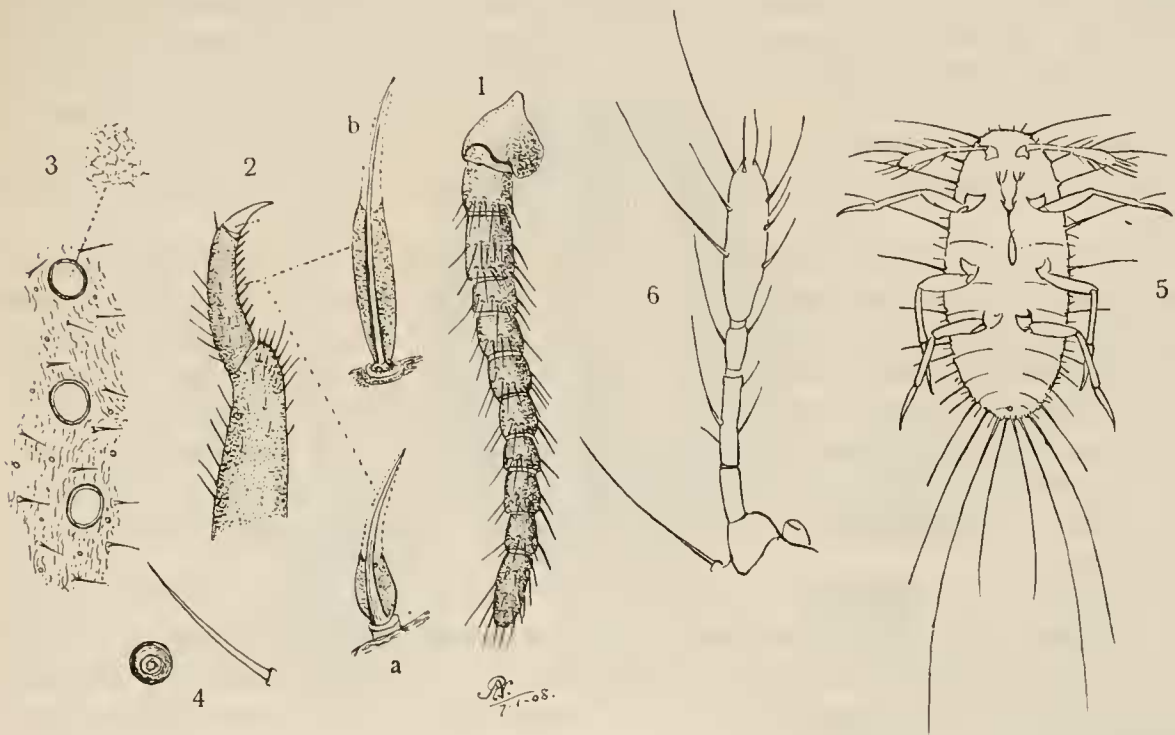


Fig. C. *Walkeria africana*, 1—4 ♀ ad: 1 antenna; 2 tarsus; 2 a, b tarsal spines; 3 three abdominal rings; 4 spinneret and spine of the derm. Fig. 5 Larva; 6 antenna.

one; second and third cylindrical; fourth to the tenth (inclusive) in length sub-equal, sides curved outwards from the base; apical segment longest; all the segments with fine short hairs. Legs stout; tibiae and tarsi (Fig. 2) furnished beneath with lanceolate spines (Fig. 2 a, b), these spines have a strong central ridge and the basal half of the membranous flanges are granulated. Anal orifice (dorsal) transversely ovate, the surrounding chitine, like the rest of the dorsal epidermis, dense; it looks very like an accidental puncture, but one can distinctly trace a short subcutaneous tube, cylindrical in shape, lying a little on one side of the orifice immediately beneath the dark epidermis. Near the posterior extremity of the abdomen on the venter, are three well-marked and relatively large rings (Fig. 3) of dense brown chitine, enclosing a thin reticulated membrane. These rings are arranged transversely, and

surrounding them are a few spinose hairs and circular spinnerets. Gland tracts occur on the derm beneath all the patches of secretion, these are irregular in outline, and so dense that no orifices are visible in them. Derm, dorsally and ventrally, practically covered with long slender spines interspersed with large circular spinnerets (Fig. 4). Mentum monomerous, rather long, furnished with numerous spinose hairs, some of which are of great length.

Length 5.50—8 mm.; greatest width 3.75—5 mm.

Young adult female without patches of white secretion; ovate but only slightly narrowed in front, low convex; colour dark terra-cotta red, base of abdominal articulations, and large thoracic punctures darker; legs and antennae piceous, tibiae and tarsi paler. Antennae, legs and derm as in old adult. Length as in the adult.

Female (? second stage). Dull orange yellow; tumid. Antennae of eleven segments, similar in character to those of the adult female, but the segments are not so highly chitinised. Mentum monomerous. Derm covered with long slender spines. Legs normal; lanceolate spines of the tibiae and tarsi as in adult female. Length 3.50 mm.

Larva (Fig. 5) very elongate. Antennae (Fig. 6) of five segments; the first broad, conical; the second and fourth shortest, together about equal in length to the third; the fifth much the longest, claviform, with two long and several short slender hairs. Marginal bristles: anal segment with 3 pairs of which the second pair are much the longest; laterals 10—11 in number, those immediately succeeding the long caudal ones short, the rest gradually lengthening towards the cephalothoracic area; there are also two between the antennae, in front. Dorsum with many long slender spines. Anal ring nonsetiferous. Mentum monomerous, obtuse, with many fine hairs at the apex.

Kilimandjaro: Kibonoto. December 1905. Among grass especially in scrub. Many females. The larvae were taken from the bodies of their parents.

The distinguishing features of this insect are its relatively small size, the short, flat, patches of white wax, the curiously shaped spines to the tarsi, and the three chitinous rings to the abdomen.

Gen. **Stictococcus** CKLL.

Canad. Ent., XXXV, p. 64 (1903).

Stictococcus multispinosus n. sp.

Fig. D, 1—5. — Female adult (Fig. 1) ovate, widest posteriorly; highly convex, sides thick, rounded or sub-vertical; covered with a thin layer of fine granular greyish-white secretion, with the exception of a median-dorsal and submarginal tract which appear as distinct blackish bands and show up in marked contrast to the other portions of the insect; the median band is usually interrupted in the region of the anal orifice (subcentral); and the continuous marginal band generally narrows towards the posterior extremity; the dorsal surface is also densely and uniformly spinose. Venter and legs piceous or purplish black, the former farinose; margin with a narrow interrupted line of denser white secretion.

Antennae (Fig. 2) short, stout, and about one third the length of the legs; the third segment the longest, its articulation with the fourth segment faintly indicated; first segment very wide; hairs short, slender, but there is at least one spinose hair on the apical segment. Legs long, slender: elaw (Fig. 3) strongly falcate; digitules simple. Derm of the upper surface densely clothed with long barbed spines (Fig. 5); the longest being about three times the length of the antennae; interspersed between the long spines are some minute simple spines, spinose hairs, and numerous circular spinnerets (Fig. 5). Derm of the venter with a few minute spines, spinose hairs, and a large group of circular spinnerets (? circumgenital glands) on the last abdominal segment surrounding what is probably the genital orifice, though its true character cannot be determined. Anal ring normal, oval in shape, and highly chitinised;

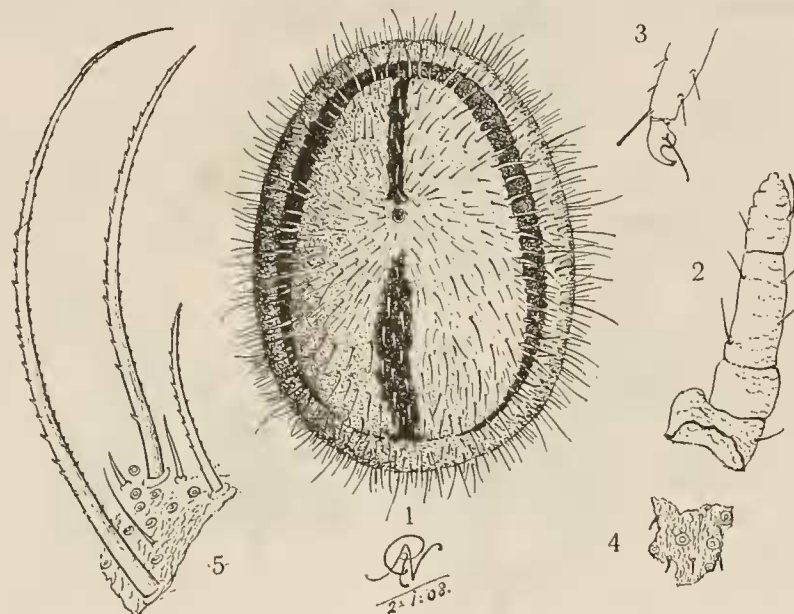


Fig. D. *Stictococcus multispinosus*, ♀ ad.: 1 dorsal; 2 antenna; 3 tarsus; 4 derm.; 5 dorsal spines.

upper valvular sclerite ovate, with three spinose hairs; lower valvular sclerite crescentic with 9–10 spinose hairs. Mentum monomerous, short, rather pointed apically. Length 2–2.50; width 1.75–2 mm.

Kilimandjaro: Kibonoto, 25–VII–05.

Dr. SJÖSTEDT is to be congratulated on the discovery of this highly interesting and remarkable insect. It is clearly distinct, and the forest of long spines with which the dorsum is clothed together with the singular arrangement of the bare band-like tracts on the dorsum are quite unique.

COCKERELL (*l. c.*) has placed this genus in the *Lecaniinae*, but having made an extensive examination of both *S. Sjöstedti* and *S. multispinosus* I have come to the conclusion that this genus is more correctly placed in the *Margarodinae* I have recently stated my reasons for this change in a manuscript already prepared for publication elsewhere.

Sub. fam. *Dactylopiinae*.

Gen. ***Dactylopius***¹ TARG.

Mem. Soc. Ent. Ital. (1867).

Dactylopius coccineus n. sp.

Fig. E, 1—3. — Female adult. Subfusiform; venter low convex, dorsum highly convex but tapering towards both extremities. Dull yellow or straw coloured, with orange-erimson above divided at the articulations with the paler colour. The erimson colour is however, sometimes entirely absent. Derm (Fig. 1 a) rather thickly studded with slender spinose hairs and small irregular spinnerets, the latter somewhat irregular in outline. Antennae (Fig. 1) of eight segments, of which the eighth is as long as

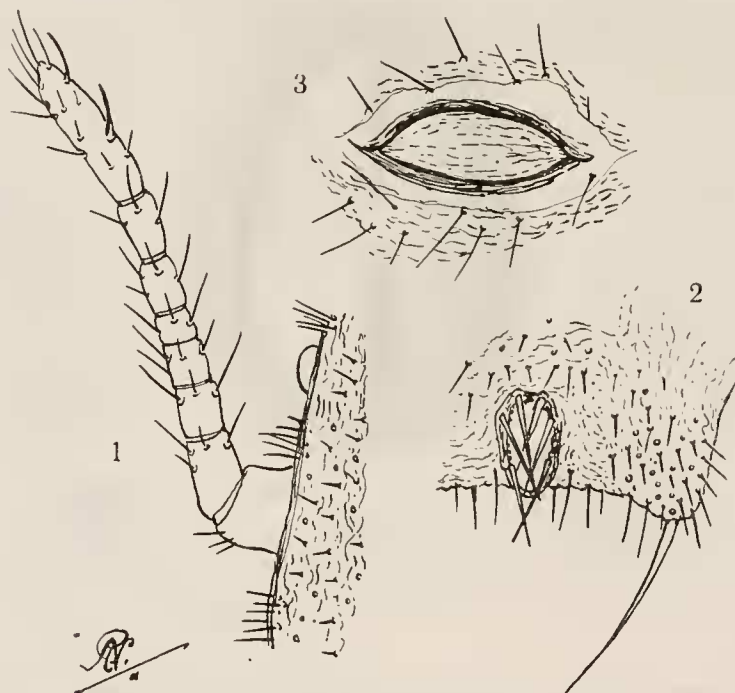


Fig. E. *Dactylopius coccineus*, ♀ ad: 1 antenna; 2 anal lobe and anal ring; 3 anal »cicatrice».

2, 3, 4, 5, 6 and 7 together; all the segments with fine short hairs, and the last two with short, slender, curved spines. Mentum bi-articulate, apical segment with many slender spinose hairs. Legs stout; tarsi almost as long as the tibiae. Anal lobes (Fig. 2) prominent, each with a single long bristle, and numerous small spinose hairs as on the rest of the derm. Anal orifice normal. Dorsum with two pairs of *very large* eye-like glands (»cicatrices») equal in width to more than one third the length of the antennae; the first pair near the margin behind the eyes, the second pair (also near the margin) on the third segment from the apex of the abdomen. Length 1,50—1,75 mm.

¹ — *Pseudococcus* WESTWOOD. FERNALD Catl. Coccidae of the World, p. 96 (1903).

Kilimandjaro: Steppe, Kirarágua, on Acaeias. April 1906.

This small species with its rather prominent anal lobes somewhat resembles a *Ripersia* but the number of antennal segments precludes its admission to this genus. Its fusiform shape, the large «cicatrices», and the orange-crimson colour may also serve to distinguish it. No trace of cereous secretion was observable, but this may have been dissolved in the alcohol.

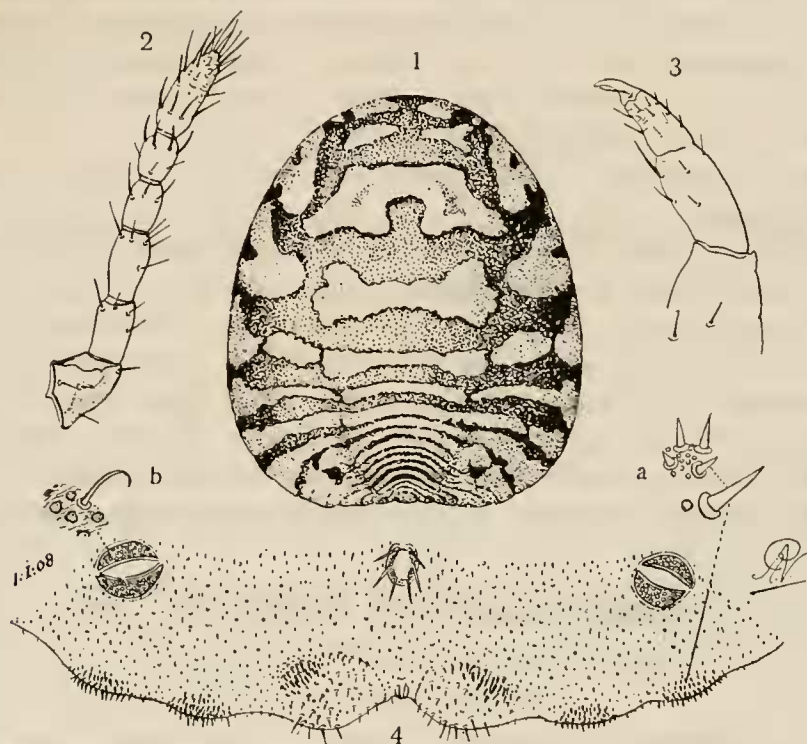


Fig. F. *Ripersia anomala*, ♀ ad: 1 dorsal: 2 antenna; 3 tarsus; 4 anal margin: 4 a group of marginal spines: 4 b curved spines on cicatrice.

Genus *Ripersia* SIGN.

Ann. Soc. Ent. Fr. (5), V, p. 335 (1875).

Ripersia anomala n. sp.

Fig. F., 1—4. — Adult female (Fig. 1) short ovate, slightly narrowed in front, highly convex, the oldest examples being almost hemispherical; venter concave, segmentation strongly pronounced, especially so at the margins. Pale ochreous-brown; dorsum with irregular interrupted bands of short, dense, white, cereous matter; in some individuals the two broad cephalic and the first abdominal bands of secretory matter, although irregular in outline, are continuous; in other examples the bands are all interrupted so that they appear as median and lateral, elongated patches. Some individuals are also nude or practically so, possibly due to abrasion. Derm practically covered with minute circular spinnerets interspersed with minute short spinose hairs. Antennae (Fig. 2) of six segments, the apical one the longest, the fourth and fifth shortest; all the segment with fine short hairs. Legs stout; tarsi

(Fig. 3) with many minute hairs; upper digitules apparently absent, lower pair short, slender; but they are often broken away. Anal ring (Fig. 4) normal. Anal lobes (Fig. 4) broadly rounded, apex with a few slender but relatively long hairs, base with a group of minute spines (Fig. 4 a); there are also similar groups of spines on the margins of the succeeding abdominal segments. Mentum bi-articulate, apical segment much attenuated, tip with several (? 10) hairs and two long slender, curved, spines.

There are two pairs of ocular-shaped glands («cicatrices»): one pair anterior, the other pair posterior (Fig. 4 b); the lunular shaped plates to (peritremes) these organs are furnished with spinnerets and slender, curved, spines (Fig. 4 b).

Length 3,50—4 mm.; width 2,25—3 mm.

Kilimandjaro: Kibonoto. Under bark, accompanied by small black ants (*Pheidole megacephala* FABR.).

This remarkable insect has some characters (external form, the arrangement of the bands and patches of cereous matter, and groups of spines) which associate it with the old genus *Coccus*, in fact it looks very like a small and partly denuded example of the cochineal insect; but these characters are more or less superficial and do not warrant its inclusion in this group. The Dactylopiinid characters undoubtedly predominate and agree best with the genus *Ripersia*. The white cereous matter is easily deciduous and may account for the inconstancy of the banding, but when present it gives the insect a very characteristic appearance.

Gen. *Saissetia* (*Lecanium*) *Deplanches* (1865).

FAUVEL, Bull. Soc. Linn. Norm., IX, p. 127.

Saissetia oleae BERN.

Mem. d'Hist. Nat. Acad., Marseille, p. 108 (1782).

A number of examples, all females. This cosmopolitan species has been recorded from South Africa, and has been received recently from Western Africa. The specimens from Kilimandjaro are the largest the author has yet seen; but in other respects they are quite typical.

Kilimandjaro: Kibonoto. 7. IX. 05. On the branches of *Ficus* sp.

January 1908.

List of Coccidæ hitherto known from the Kilimandjaro-Meru district.

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| 1. <i>Monoplebus</i> <i>Sjöstedti</i> NEWST. n. sp. | 5. <i>Dactylopius</i> <i>coccineus</i> NEWST. n. sp. |
| 2. » <i>pallidus</i> NEWST. n. sp. | 6. <i>Ripersia</i> <i>anomala</i> NEWST. n. sp. |
| 3. <i>Walkeria</i> <i>africana</i> NEWST. n. sp. | 7. <i>Saissetia</i> <i>oleæ</i> BERN. |
| 4. <i>Stictococcus</i> <i>multispinosus</i> NEWST. n. sp. | |